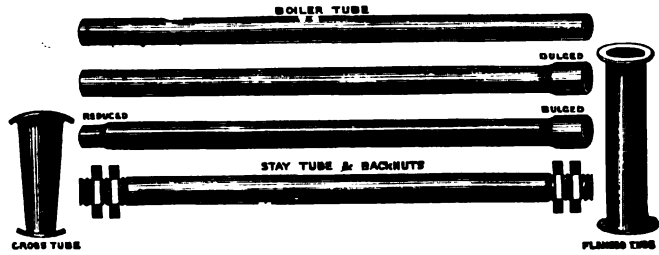


# LAP-WELDED IRON BOILER TUBES, STAYS, AND NUTS.



## GROSS PRICES PER FOOT OF LAP-WELDED IRON BOILER TUBES.

External diameter in inches	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾
Usual B. W. Gauge .. ..	14	13	13	13	12	12	12	11	11	11	11	10	10	10
Price per foot of usual B. W. Gauge .. ..	9½d	9¾d	10d	10½d	11d	11½d	1/0	1/1	1/1½	1/3	1/4½	1/8	1/9½	1/11
Do. 1 extra Gauge thicker	10¾d	11¼d	11½d	1/0	1/0½	1/0¾	1/1	1/1½	1/2½	1/3	1/4½	1/6½	1/10	2/0
Do. 2 ditto ditto	1/0	1/0½	1/0¾	1/1	1/1½	1/2	1/2½	1/3½	1/4½	1/6	1/8	2/0	2/2½	2/4
Do. 3 ditto ditto	1/1½	1/1¾	1/1½	1/2½	1/2¾	1/3½	1/4	1/5½	1/6½	1/8½	1/10½	2/2½	2/4½	2/6½
Do. ¾ inch thick .. ..	1/5½	1/5¾	1/5½	1/6	1/6½	1/6¾	1/6½	1/7	1/8	1/10	2/0½	2/2½	2/4½	2/6½
External diameter in inches	5	5¼	5½	5¾	6	6¼	6½	6¾	7	7½	8	8½	9	9½
Usual B. W. Gauge .. ..	8	8	7	7	7	7	7	7	7	5	4	3½	3½	3½
Price per foot of usual B. W. Gauge .. ..	3/8	4/0	4/7	5/0	5/3	5/9	6/6	6/9	7/0	9/4	10/9	13/4	14/9	17/0
Do. 1 extra Gauge thicker	4/0	4/4	5/2	5/7	5/11	6/6	7/4	7/7	8/0	10/0	The Discount quoted for 1½ "to 7½" inclusive does not apply to the above larger sizes. Special quotations given.			
Do. 2 ditto ditto	4/6	4/11	5/7	6/1	6/5	7/0	7/11	8/2	8/9	11/0				
Do. 3 ditto ditto	4/10	5/4	6/0	6/7	7/0	7/7	8/7	8/10	9/6	11/9				
Do. ¾ inch thick .. ..	4/0	4/4	4/7	5/0	5/3	5/9	6/6	6/9	7/0	9/4				

## GROSS PRICES PER FOOT FOR IRON TUBULAR SCREWED STAYS, INCLUSIVE OF 11 INCHES OF SCREWING.

External diameter in inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5
¾ Thick .. ..	2/2	2/3	2/4	2/5	2/7	2/9	3/1	3/4	3/7	3/11	4/4	4/9	5/0
¾ Thick .. ..	2/6	2/7½	2/9	2/10	2/11	3/3	3/8	4/0	4/4	4/8	5/2	5/8	6/1
¾ Thick .. ..	3/4	3/7	3/10	4/2	4/7	5/0	5/6	6/0	6/6	7/0	7/7	8/7	9/4

Tubes of intermediate diameter to be charged at the same price as the next larger size. Maximum length, 16 feet.

## GROSS PRICES PER FOOT FOR IRON TUBULAR STAYS, NOT SCREWED.

External diameter in inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5
¾ Thick .. ..	2/0	2/1	2/2	2/3	2/5	2/7	2/10	3/1	3/4	3/8	4/0	4/5	4/8
¾ Thick .. ..	2/4	2/5½	2/7	2/8	2/9	3/1	3/5	3/9	4/1	4/5	4/10	5/4	5/9
¾ Thick .. ..	3/2	3/5	3/8	4/0	4/5	4/10	5/3	5/9	6/3	6/9	7/3	8/3	9/0

Lengths in excess of maximum lengths at special prices. All orders where Gauge is not specified will be executed according to the usual Gauge on this list.

No extra charge for Tubes swelled ¼ inch at one end and 3 inches up. Extra swelling to be charged 12s. per 100 ends gross per ¼ and 3 inches long, up to 4 inches diameter. Tubes of larger diameter at special prices.

## GROSS PRICES OF STAY BACKNUTS AND SCREWING STAYS IN EXCESS OF 11 INCHES OF SCREW.

External diameter in inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5
Screwed Nuts, each .. ..	1/0	1/0	1/2	1/3	1/5	1/6	1/10	2/3	2/8	3/0	3/5	3/9	4/2
Screwing Stays, per lineal inch .. ..	1½d.	1½d.	2d.	2d.	2½d.	2½d.	3d.	3d.	3½d.	3½d.	4d.	4d.	5d.

Stays of intermediate thickness to be charged at the next thickest size.

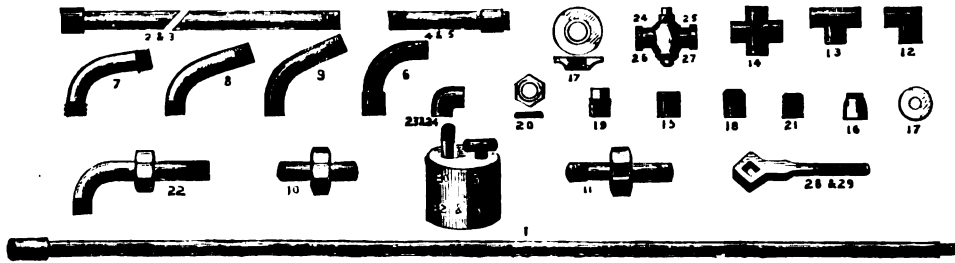
Stock of ordinary sizes kept at Gas and Boiler Tube Warehouse, Vine Street, Minories, E.C.

Discount, per cent.

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

# WELDED IRON TUBES AND FITTINGS, FOR GAS, STEAM, AND WATER.



## PRICES. TUBES.

Internal diameter.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{2}$	4
1 Tubes, from 2 to 14 ft. long .. per ft.	0/2 $\frac{1}{2}$	0/3	0/3 $\frac{1}{2}$	0/4 $\frac{1}{2}$	0/6	0/8	0/11	1/2	1/6	1/9	2/6	3/3	4/0	4/6
2 Pieces 12 ,, 23 $\frac{1}{2}$ in. long .. each	0/4	0/5	0/7	0/9	1/0	1/4	1/8	2/0	2/6	3/0	4/6	6/3	7/6	9/0
3 Ditto 3 ,, 11 $\frac{1}{2}$ ,, .. ..	0/2	0/3	0/4	0/6	0/8	0/11	1/1	1/4	2/0	2/3	4/0	4/9	6/0	7/0
4 Long Screws 12 to 23 $\frac{1}{2}$ ,, .. ..	0/5	0/7	0/9	0/11	1/2	1/6	2/0	2/6	3/3	4/0	5/6	7/0	8/6	10/0
5 Ditto 3 to 11 $\frac{1}{2}$ ,, .. ..	0/4	0/5	0/6	0/8	0/10	1/0	1/3	2/0	2/6	3/0	4/6	5/6	6/6	7/6
6 Bends .. .. ..	0/5 $\frac{1}{2}$	0/6 $\frac{1}{2}$	0/7	0/8	0/11	1/3	1/9	2/3	3/3	4/3	6/6	10/0	12/0	16/0
7, 8, 9 Springs, not socketed .. ..	0/4	0/5	0/6	0/7	0/9	0/11	1/4	1/8	2/6	3/3	5/6	7/6	10/0	12/0

## FITTINGS.

10, 11, Socket Union, Pipe Union .. each	2/0	2/6	3/0	4/0	5/6	6/9	8/0	9/0	10/0	12/0	14/0	16/0	18/0	22/0	28/0
12 Elbows .. .. ..	0/6	0/6 $\frac{1}{2}$	0/7	0/8	0/10	1/2	1/9	2/3	3/0	3/6	5/6	8/6	11/0	14/0	22/0
13 Tees .. .. ..	0/6	0/6 $\frac{1}{2}$	0/7	0/9	1/0	1/3	1/9	2/6	3/0	3/9	6/0	9/6	12/6	16/6	24/0
14 Crosses .. .. ..	0/10	1/0	1/0	1/5	1/9	2/3	3/0	3/6	4/6	5/3	10/6	16/0	21/0	30/0	42/0
15 Plain Sockets .. .. ..	0/1 $\frac{1}{2}$	0/1 $\frac{1}{2}$	0/2	0/3	0/3 $\frac{1}{2}$	0/4	0/6	0/7	0/9	1/3	1/6	2/6	3/0	3/6	5/0
16 Diminished Sockets .. .. ..	0/3	0/4	0/5	0/6	0/7	0/9	0/11	1/1	1/3	2/0	3/0	4/0	5/0	7/0	9/0
17 Flanges .. .. ..	0/8	0/9	0/10	1/0	1/2	1/4	1/6	1/9	2/0	2/6	3/0	5/0	6/9	8/6	10/0
18, 19 Caps and Plugs .. .. ..	0/2	0/3	0/3	0/4	0/5	0/6	0/8	0/10	1/0	1/3	2/0	2/6	3/6	4/9	7/0
20, 21 Backnuts and Nipples .. ..	0/1	0/2	0/2	0/3	0/3 $\frac{1}{2}$	0/4	0/6	0/8	0/10	1/0	1/9	2/3	3/0	3/6	4/6
22 Union Bends .. .. ..	2/6	3/0	3/9	5/0	6/3	8/6	10/0	11/6	13/6	16/0	19/0	22/0	25/0	30/0	36/0
23 Round Elbows .. .. ..	0/7	0/7	0/8	0/9	1/0	1/4	1/11	2/6	3/4	3/10	6/6	10/0	13/0	16/0	25/0
24 Iron Main Cocks .. .. ..	2/3	2/9	3/6	4/6	6/6	8/6	11/0	14/0	18/0	27/0	36/0	44/0	50/0	75/0	90/0
25 Ditto ,, with Brass Plugs .. ..	4/6	5/6	7/6	10/6	15/0	19/6	25/0	32/0	47/0	60/0	90/0	110/0	140/0	190/0	280/0
26 Round-way Iron Cocks .. .. ..	3/6	4/0	5/6	7/6	10/0	13/0	17/6	22/0	38/0	54/0	62/0	70/0	100/0	160/0	240/0
27 Ditto ,, with Brass Plugs .. ..	5/0	6/6	9/0	13/0	19/0	28/0	36/0	42/0	60/0	85/0	105/0	120/0	180/0	280/0	400/0
28 Cock Spanners, Wrought Iron ..	1/0	1/4	1/8	2/0	2/4	3/0	3/6	4/0	4/9	6/0	7/6	9/0	12/0	14/0	18/0
29 Ditto Malleable Cast Iron .. ..	0/7	0/8	0/10	1/2	1/8	2/2	2/9	3/3	4/9	6/0	7/6	9/0	12/0	14/0	18/0
30 Syphon Boxes, 1 quart .. .. ..	11/0	12/0	13/0	14/0	15/0	15/6	16/0	18/0	..	..	..	..	..	..	..
31 Ditto 2 ,, .. .. ..	16/0	17/0	18/0	19/0	21/0	23/0	25/0	30/0	35/0	40/0	45/0	50/0	56/0	60/0	66/0
32 Ditto 3 ,, .. .. ..	20/0	22/0	24/0	25/0	26/6	28/0	32/0	35/0	40/0	45/0	50/0	56/0	60/0	66/0	72/0
33 Ditto 4 ,, .. .. ..	21/0	23/0	25/0	27/0	29/0	31/0	34/0	38/0	42/0	47/0	54/0	60/0	66/0	72/0	78/0
34 Malleable Cast Round Elbows ..	0/6	0/6 $\frac{1}{2}$	0/7	0/8	0/10	1/2	1/9	2/3	3/0	3/6	5/6	9/0	12/0	15/0	30/3

Corebars, Hydraulic and Hot-Water Pipes, and Best Stocks for Engineers, with Improved Fluted Taps to Order.

NOTE.—This List applies to Tubes up to 14 feet; if longer lengths are required, Prices will be given on application.

Prices will be quoted when required for Tubes of any size or thickness not enumerated in this List. Tubes of intermediate diameters will be charged at the next higher rate.

Delivered in London, Liverpool, Hull, and Bristol. Carriage paid only on lots of £2 and upwards.

Stock of ordinary sizes kept at Gas and Boiler Tube Warehouse, Vine Street, Minorities, E.C.

Discount, per cent.

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORITIES, LONDON, E.C

## per lb.

$1\frac{5}{8}$  in. to 4 in. diameter outside, inclusive, to 14 w.g. . . . .  
Under  $1\frac{5}{8}$  ", to  $1\frac{1}{4}$  " , " " " " " " " "  
 $\frac{1}{2}$ d. per lb. extra for each gauge thinner.

## per lb.

	1½ in.	to ¾ in.	diameter outside, inclusive, to No. 19 w.g., not exceeding 12 ft. in length
Under	¾	to ⅝	" " " " " "
"	⅝	to ½	" " " " " "
			20 " " "
Extras:—	From 12 to 15 feet lengths, 1d. per lb. Tinning, 1d. per lb. For thinner gauges, 1d. per lb. per		

## per lb.

[illegible]

## per lb.

Under	$1\frac{1}{4}$ in.	to	$\frac{3}{4}$ in.	diameter outside, inclusive, to 19 w.g., not exceeding 12 ft. in length
	$\frac{3}{4}$ "	to	$\frac{5}{8}$ "	" " " " " "
"	$\frac{5}{8}$ "	to	$\frac{1}{2}$ "	" 20 " " "

1d. per lb. extra for each gauge thinner.

## per lb.

[illegible]

## per lb.

$\frac{1}{4}$  in. to  $\frac{5}{16}$  in., to 20 w.g. . . . . .  
 Above  $\frac{5}{16}$  in. to 19 w.g. . . . . .  
 Extras:—Reeded,  $\frac{1}{4}d.$ ; Twisted,  $1d.$ ; Mandrel drawn,  $1d.$  per lb.; or  $1\frac{1}{4}d.$  per lb. if cut to lengths.  
 If thinner,  $\frac{1}{4}d.$  per lb. per gauge extra.

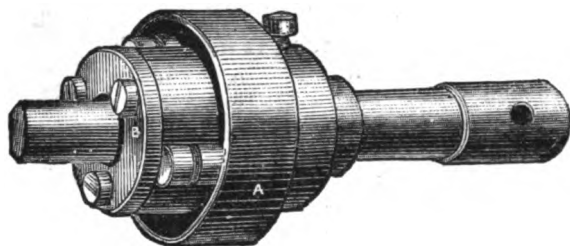
Maximum length, 15 feet. 1d. extra per foot for each foot above 10 feet.

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**Intermediate Diameters** will be charged next higher rate. Thinner sizes and other variations by special quotations.  
Discount. per cent.

**2 B 2**

## DUDGEON'S PATENT ROLLER TUBE EXPANDER.

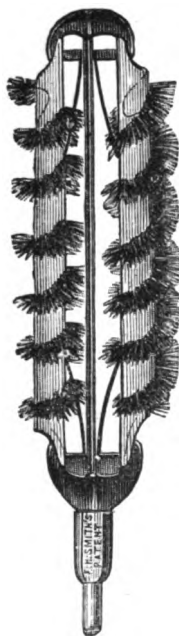


## PRICES.

1 in. £3	1½ in. £3	1¾ in. £3	1½ in. £3	1¾ in. £3 10s.
1¾ in. £3 12s. 6d.	1¾ in. £3 12s. 6d.	2 in. £4 4s.	2½ in. £4 10s.	2½ in. £5
2½ in. £6	2½ in. £6 10s.	2½ in. £7	3 in. £8	3½ in. £8 15s.
3½ in. £8 15s.	3½ in. £10	3½ in. £11	3½ in. £11	4 in. £12
4½ in. £14	4½ in. £14	5 in. £17 10s.	6 in. £18 10s.	7 in. £25

These dimensions refer to *external* diameter of Tubes.

## EXPANDING TUBE BRUSHES.

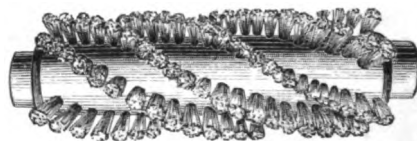


Diameter.	Brushes, per pair.	Stems, each.	Complete.
inches.	s. d.	s. d.	s. d.
1½	3 0	1 6	4 6
1¾	3 4	1 6	4 10
2	3 8	1 10	5 6
2½	4 0	1 10	5 10
2½	4 6	1 10	6 4
2¾	5 0	1 10	6 10
3	5 6	1 10	7 4
3½	6 0	1 10	7 10
3½	6 6	2 3	8 9
3½	7 0	2 3	9 3
4	7 6	2 3	9 9

SPIRAL TUBE  
BRUSH.

Whalebone, 22s. per doz.  
Iron Wire, 23s. "  
Brass .. 30s. "  
Fibre .. 18s. "

## SOLID TUBE BRUSHES.



Diameter.	Fibre.	Bristle.	Diameter.	Fibre.	Bristle.
inches.	s. d.	s. d.	inches.	s. d.	s. d.
2	1 0	1 9	3½	1 10	2 9
2½	1 2	2 0	3½	2 0	2 10
2½	1 4	2 2	3½	2 2	3 0
2½	1 6	2 4	4	3 4	3 2
3	1 8	2 6			

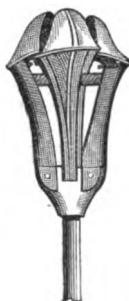
## COLLICOTT'S

## PATENT TUBE SCRAPER.

FOR CLEANING MARINE, PORTABLE, LOCOMOTIVE, AND STATIONARY BOILERS.

This Scraper is the best in use for the following reasons:

1. For its simplicity of construction, greater durability, and effectiveness.
2. The Scraping Edges are of chilled iron—harder than hardened steel.
3. The temper does not draw with the heat as with Steel Scrapers.
4. It is always expanded ready for use, being nearly as easy to operate as a Wire Brush, and will outwear several of them.



5. When pushed through the tube it never catches at the rear end.
6. When in the tube it is a perfect fit (contracting closer to the centre than any other Scraper made), thereby removing all scale and ashes without the use of a whalebone brush so often used after scraping.
7. No part of the Scraper comes in contact with the tube to create friction, except the scraping edge.
8. This Scraper has sufficient elasticity to pass over any roughness in the tube that cannot be scraped off, which is not the case with any Steel Scraper made.

Price 4s. per inch, from 2 inch and upwards. Discount, per cent.

Each Scraper stamped with *outside* diameter of Tube.

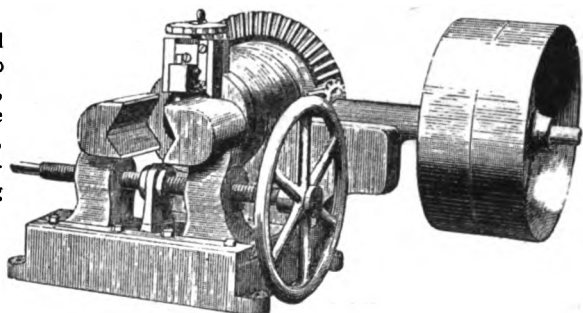
## ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

## PATENT BEVIL-GEARED TUBE CUTTER.

Its utility and economical working may be appreciated by the fact that, with a D size machine, more than 400 lengths of 2-inch iron tube can be cut off in ten hours, and by the E size more than 200 lengths of 4-inch in the same time. Brass tubing, such as for locomotive boilers, is cut by the machine with astonishing celerity and regularity, and no locomotive, marine, or gas engineering works can be complete without them.

THE MACHINES ARE MADE SO AS TO BE DRIVEN  
EITHER BY HAND OR BY POWER.

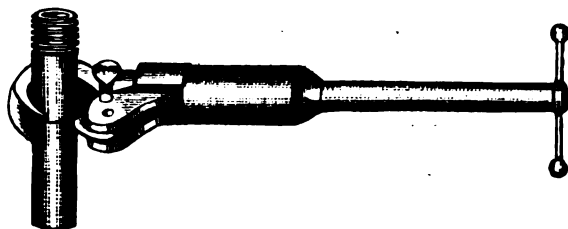
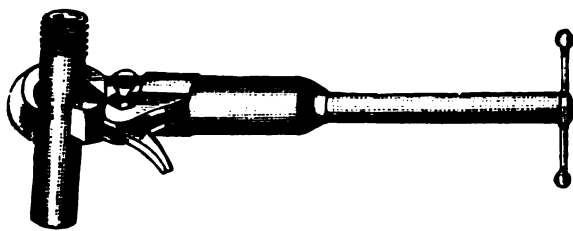


D	Size to cut from	1½	to	2½	inches, outside diameter	..	..	..	Price £14
E	"	"	"	1½	"	5	"	"	" 25
F	"	"	"	2½	"	6	"	"	" 29
Driving pulleys D size should run 100 revolutions per minute.									
"	"	"	"	E	"	"	"	105	" "
"	"	"	"	F	"	"	"	95	" "

## PATENT COMBINED GAS-TUBE CUTTER AND WRENCH.

AS WRENCH.

AS CUTTER.



No. 1.	½ in. to 1 in.	..	..	..	£0 16s. 6d. each.
" 2.	1½ "	"	2 in.	..	1 6s. 0d. "
" 3.	2½ "	"	3½ in.	..	1 16s. 6d. "

Extra Cutters, No. 1.	..	..	..	..	1s. 0d. each.
" 2.	..	..	..	..	1s. 6d. "
" 3.	..	..	..	..	1s. 6d. "

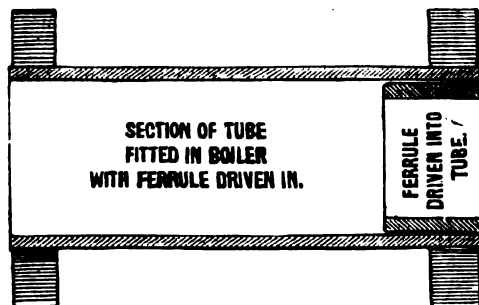
This Cutter is a very simple and effective tool for the purpose, and is very strong and durable. It entirely dispenses with the necessity of carrying more than two sizes, to cut off or grip all size tubes from ½ to 2 inch.

## PATENT BOILER TUBE FERRULES.

Largest external diam. in inches	1½	1½	1½	1½	2	2½	2½	2½	2½	2½	2½
Thickness Birmingham W.G.	12	12	12	12	11	11	11	11	11	10	10
Iron, per 1000	150/	150/	157/6	165/	180/	195/	210/	225/	240/	255/	270/
Steel, per 1000	202/6	202/6	202/6	217/6	232/6	255/	270/	285/	300/	315/	337/6

Largest external diam. in inches	2½	3	3½	3½	3½	3½	3½	3½	3½	4
Thickness Birmingham Wire Gauge	10	10	9	9	9	9	9	8	8	8
Iron, per 1000	285	307/6	330/	352/6	375/	397/6	420/	442/6	495/	517/6
Steel, per 1000	360	382/6	412/6	442/6	465/	495/	517/6	547/6	600/	645/

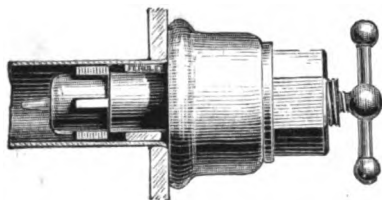
Discount, per cent.



ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

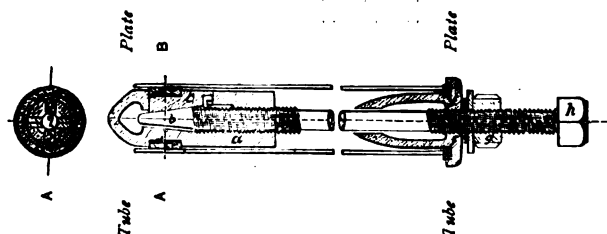
## TUBE FERRULE EXTRACTOR.



No.	Inter. Diam. For 1 in.	£	s.	d.	No.	Inter. Diam. For 2½ in.	£	s.	d.
1	1	3	0	0	10	10	5	15	0
2	1½	3	5	0	11	3	6	0	0
3	1½	3	10	0	12	3½	6	10	0
4	1½	3	15	0	13	4	6	15	0
5	1½	4	0	0	14	4½	7	0	0
6	2	4	10	0	15	5	7	5	0
7	2½	4	15	0	16	6	8	0	0
8	2½	5	0	0	17	7	9	0	0
9	2½	5	10	0	18	8	10	0	0

TUBE  
EXTRACTOR  
FOR  
CONDENSER  
TUBES,  
£1 per Set.

## SISSON'S PATENT EXPANDING TUBE PLUG AND STOPPER.



The great importance of this Patent Expanding Plug will at once be seen by all practical men interested in steam shipping, and its suitability will be apparent, as a burst tube can at sea be immediately stopped without reducing the pressure or drawing fires, thus avoiding a great waste of time, and also will be the means of obviating the necessity of steamers putting into any port to repair the tubes, as has frequently been the case hitherto. The Patent Plug and Stopper can remain in until the vessel arrives at her destination, and there the tube can be replaced or a common Plug used, leaving the Patent Plug and Stopper available for immediate future use.

When once tried, no steam-ship owner would send his vessels to sea without a supply on board.

Price £1 5s. each.

For orders, give length of Tube and inside diameter.

## EADES' PATENT PULLEY BLOCKS.

These Blocks sustain the load if the chain is loosed, and lift much easier than any other Blocks.

One man can lift a ton with a set of Ton Blocks.

No. 3 are made with Sprocket Wheel.

## No. 1.

Tested to	½	¾	1	1½	2	3	4 tons.
Price of Block	12/6	20/	30/	40/	50/	100/	120/
„ Chains	2/	2/	3/	3/4	3/8	4/4	5/ per foot of lift.

Including Hand Chain for each foot the Block is required to lift.

## No. 3.

Tested to	2	3	4	5	6	8	10 tons.
Price of Block	85/	115/	140/	200/	240/	320/	400/
„ Chains	3/8	4/4	5/5	6/	9/4	12/	14/ per foot of lift.

Including Hand Chain for each foot the Block is required to lift.

In ordering, please give Lift required.



## WESTON'S DIFFERENTIAL PULLEY BLOCK.

Tested to	5	10	12	20	30	40 cwt.
Bright BB Chain.	12/6	20/	20/	30/	40/	50/ per set.
	6d.	6d.	7d.	9d.	10d.	11d. per ft.

## WITH RATCHET.

By which one man can lift the weight specified.

Tested to	1	1½	2	3 tons.
Bright BB Chain.	50/	60/	70/	100/ per set.
	9d.	10d.	11d.	1/1 per foot.

## Rope extra.

N.B.—The Sheaves of the 1, 1½, and 2 tons, are now CHILLED.

## PULLEY WITH SPROCKET WHEEL.

Tested to	2	3	4 tons.
Bright BB Chain.	75/	110/	135/ per set.
	11d.	1/1	1/3 per foot.

## PULLEY WITH TANGY'S PATENT GEAR.

Tested to	Price of Block per Set.	Bright BB Chains per Foot.	
4 tons.	135/	1/3	
5 „	200/	1/6	
6 „	240/	2/4	
8 „	320/	3/	
10 „	400/	3/6	

Superior Rope made especially for these Pulley Blocks, extra.

In ordering either kind, please specify height of Lift, or state what Chain is required. Weston's Block, when worked from above with Ratchet or Sprocket, takes about three times the length of Lift; when worked from below, by pulling the Chain, about four times the length of Lift required.

Discount, per cent.

ALEXANDER ANDERSON,  
OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.



## BEST LONDON-PATTERN PULLEY BLOCKS.

These Blocks are made with turned Shafts and bright turned and bored Pulleys ; each Plate forms a support for the centre Shaft. The eye for end of rope is supplied to Block with least number of Sheaves to each pair ordered. The Grooves are all wider than size given in List, to allow for new rope being larger.



Diameter of Pulley .. ..	2½	3	3½	4	4½	5	6	7	8	9	10	11	12	14	15	16 in.
Width of Groove .. ..	⅜	½	⅝	⅞	1	1⅛	1¼	1½	1¾	2	2¼	2½	2¾	3	3½ in.	
Snatch Block—Price .. ..	6/0	6/0	6/0	7/0	8/0	11/6	13/6	16/6	21/6	32/6	60/0	80/0	110/0	140/0	170/0	210/0
Average Weight in lbs. ..	1¼	3½	3½	6	10	12½	15¾	23½	37	37	70					
1-Sheave Block—Price .. ..	4/0	4/6	4/6	5/9	7/6	10/	11/6	14/0	19/0	30/0	52/6	72/0	98/0	110/0	130/0	164/0
Average Weight in lbs. ..	1½	3½	3½	4¾	8	13½	14	20	36	36	62					
2-Sheave—Price .. ..	5/6	7/0	7/0	8/6	11/0	15/6	17/0	24/6	35/6	50/0	98/0	124/0	144/0	170/0	203/0	242/0
Average Weight in lbs. ..	2	5¾	5¾	9	15	20½	25	38	59	80	115					
3-Sheave—Price .. ..	7/0	8/6	8/6	10/6	14/0	19/6	21/6	30/6	48/6	70/0	127/0	157/0	190/0	222/6	262/0	310/0
Average Weight in lbs. ..	3	7½	7½	12	19	27½	37	50	78	108	155					
4-Sheave—Price .. ..	8/6	10/0	10/0	12/6	18/6	25/6	28/6	46/0	63/0	92/6	157/0	190/0	222/6	280/0	352/0	400/0
Average Weight in lbs. ..	4	8	8	11½	25	36	47	68	110	142	195					
Brass Sheave Blocks—per Sheave extra .. ..	9d.	1/6	1/6	2/0	3/0	4/6	6/3	7/9	11/6	15/3	21/6					

The 10 x 2 in. Pulley Blocks, and all larger sizes, are made with Rings instead of Hooks. All parts can be had in duplicate, as they are interchangeable. The above weights are not guaranteed, but given as a guide to Purchasers.

Discount, per cent.

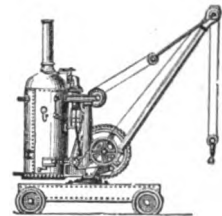
## IMPROVED PORTABLE STEAM-CRANE,

**SUITABLE FOR WHARF OR RAILWAY.**

\* This Improved Portable Steam-Crane is fitted on a Wrought-Iron Carriage, and may either have Roadway or Flanged Railway Wheels. The Foot Brake, Starting Handles, &c., are all conveniently arranged, to enable the Crane to be under the easy control of one man. The Engine and Boiler swing completely round on the Central Pillar, and help to counterbalance the load. The Jib is adjustable. All the Cranes are made to hoist, lower, and turn round by steam. These Cranes are manufactured of the best materials, the whole working parts being accurately fitted by the aid of the most improved machinery. In the construction of these Cranes strict attention has been given that every part possesses ample strength. The Central Pillar is made of wrought iron, the advantage of which over the ordinary cast-iron column must be at once apparent. The Boiler is fitted with Cross Tubes, which entirely prevent priming. All the Cranes are fitted with Link Motion.

		PRICES.		Single Cylinder.		Double Cylinder.	
To Hoist, with Return Chain and Block, up to 2 tons	..	..	£280	..	..	..	—
"	"	3	"	..	..	..	£360
"	"	4	"	..	..	..	425
"	"	5	"	..	..	..	485
"	"	7	"	..	..	..	540

**Larger Sizes in proportion.**



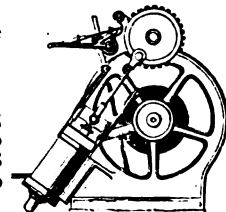
## IMPROVED STEAM WINCH.

**SUITABLE FOR SHIPS' DECKS, CONTRACTORS, SHIPEUILDERS, WAREHOUSES, ETC.**

The Winch is fitted with a Pair of Cylinders, Link Motion for Reversing, Double Purchase Motion, powerful Brake for Lowering, and with all the necessary Clutches, Handles, &c., within easy reach of the operator. The parts subject to most strain are made of best cast malleable iron; the wearing parts are all fitted with suitable adjustments to enable the effects of tear and wear to be easily and speedily remedied. The whole working parts are of ample strength, and carefully and accurately fitted by the aid of the most improved machinery.

Two Handles are provided, to enable the Winch to be worked by Hand Power when the steam is down. Boilers can be supplied if required.

PRICES.					
Steam Winch, with Two Cylinders, 5 in. diameter and 10 in. stroke	..	..	..	..	£75
"                    "          6          "          "	..	..	..	..	86
"                    "          7          "          "	..	..	..	..	98
"                    "          8          "          "	..	..	..	..	120



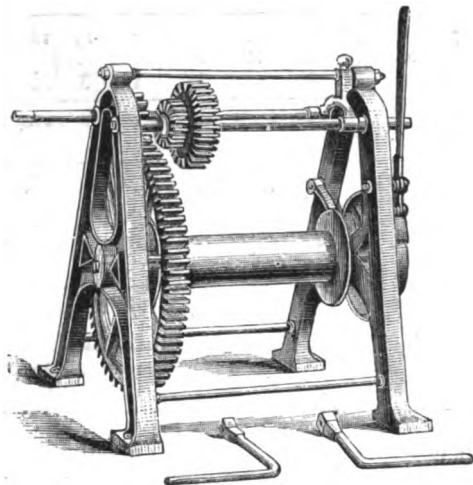
ALEXANDER ANDERSON.

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

## HOISTING CRABS.

Handles do not revolve when lowering by the Brake. Shafts are turned, the Bearings bored. Steel Keys, &c. These Crabs will lift direct from the barrel fully one-third the weights given.

SPECIAL QUOTATION GIVEN FOR LARGER SIZES.



### SINGLE PURCHASE.

No.	To lift with 2 and 3 Sheave Pulley Blocks.	Price with Brake.	Price without Brake.
1	1 ton.	£4 2 6	£3 0 0
2	1½ "	4 12 6	3 7 6
3	2 "	5 10 0	4 5 0
4	3 "	6 10 0	5 0 0
5	4 "	7 15 0	6 5 0
6	6 "	8 15 0	7 5 0

### DOUBLE PURCHASE.

1	2 tons.	6 10 0	5 5 0
2	8 "	7 10 0	6 0 0
3	4 "	8 17 6	7 7 6
4	6 "	9 17 6	8 5 0
5	8 "	12 0 0	10 0 0
6	10 "	15 15 0	13 12 0
7	12 "	19 10 0	17 5 0

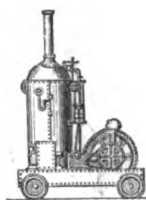
Discount, per cent.

## IMPROVED PORTABLE STEAM HOISTING ENGINE, SPECIALLY SUITABLE FOR DISCHARGING VESSELS, DRIVING PUMPS, HOISTING SAILS, LIFTING ANCHOR, AND FOR SHIP'S DECK PURPOSES GENERALLY.

This Improved Steam-Winch has been constructed specially with the view of meeting all the requirements on a ship's deck and working it there with perfect safety. It is made portable, the carriage being fitted with wheels, either flanged for rails or plain for an ordinary roadway, and is thus equally well suited for the hoisting operations of the builder or contractor.

The Engine is made of various sizes, the smallest of which will raise weights up to 12 cwt. at a speed of from 40 to 50 feet per minute; the largest size will raise weights of 45 cwt. at the same speed. Each Engine is fitted with Link Motion for Reversing, and powerful Friction Brake.

A new arrangement of Valve Gear is introduced, whereby a separate handle for the steam valve is dispensed with.



The Engine is worked exclusively by the reversing handle, and this is so connected with the steam valves that in lifting the load that amount of steam necessary to perform the work is admitted to the cylinder, and no more. Another great advantage peculiar to this Winch is that the valves are arranged to prevent the Engine stopping on the centres, thus giving to the single cylinder the advantages in this respect possessed by an engine having double cylinders. The working parts are reduced in number, and are so simple that it is almost impossible for those unacquainted with machinery to have the least difficulty in working the Engine.

The Clutch for throwing the Engine in or out of gear enables the man working the Engine to have entire control over it without risk of the barrel slipping. A Chain Pulley is fixed on the Barrel Shaft, which can be used separately for driving pumps, lifting anchor, hoisting sails, &c. The ends of the Barrel Shaft are extended, on which are fixed Cones, which revolve with the Barrel Shaft, but not with the Barrel. These Cones are found very useful for many deck purposes. The Handles for reversing and for throwing the Clutch out or in gear, as well as the Foot Lever for Brake, are all within easy reach of each other. The Engine and Boiler are securely fixed to a Wrought-Iron Carriage, which also forms the Tank for supplying the Boiler with water.

The Boiler is provided with Cross Tubes, and is fitted with Steam Gauge, Glass Water-Gauge, Two Pet Cocks, Blow-off Cock, Man Hole, Sludge Holes, and Two Safety Valves, one of which is loaded to 50 lb. per square inch, and locked up, and is thus entirely out of the control of anyone but the holder of the key.

Ring Bolts are fitted to the Carriage, by which it can be secured to the deck. Similar Bolts are fitted to the Boiler, by which it can be stayed if found necessary.

### PRICES.

Steam Winch, as above described, to hoist up to 12 cwt.	.. .. .	£138
" " " 22 "	.. .. .	170
" " " 35 "	.. .. .	210
" " " 45 "	.. .. .	255

N.B.—These Engines can be made Self-Propelling at 5 per cent. extra to Price List.

ALEXANDER ANDERSON,

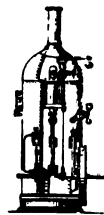
OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.



## Improved High-Pressure Vertical Steam Engines and Boilers.

WITH CHIMNEY SHAFT, BASE PLATE, AND ASH PIT COMPLETE.

These Engines may be started at once, no Building whatever being required. The Engine is securely fitted to a strong Cast-Iron Frame detached from the Boiler. The Ash Pit is provided with a door for removing the ashes and regulating the draught, thus giving complete control over the power of producing Steam in the Boiler. These Engines possess various important advantages over the ordinary Stationary Horizontal Engines, several of which may be briefly stated. The space occupied by the former as compared with the latter is considerably less, thus rendering them available for many purposes where ordinary Engines cannot be used, while at the same time an important advantage is gained in their favour for Shipment, for Warehouses, and other places where space is limited. These Engines have only to be set down on a secure foundation, and the Feed-Water Pipe connected, when they are ready for work; they may be used without risk of fire on a wooden floor, with only, in such cases, the addition of an ordinary Water Ash Pan.



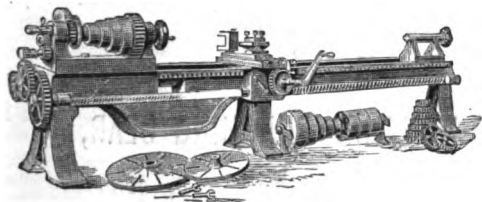
The Boilers are made with large Fire Boxes and Cross Tubes, the whole of the Heating Surface being exposed to the direct action of the Fire. Less fuel is consumed than in the ordinary Multitubular or Dome Boilers, while priming is entirely prevented. Every Boiler is tested by Hydraulic pressure to 200 lb. per square inch.

The Crank Shaft of these Engines is constructed to admit of the Fly Wheel being placed at either side, or on a Pulley at the side opposite the Fly Wheel to drive additional Machinery. The size of Cylinder and length of Stroke are given below. *It will be found that the Cylinders are larger, and the Engines consequently more powerful, than most other Engines of the same nominal Horse-power.*

The best materials, as well as the most improved Machinery, are used in the manufacture of these Engines. All the necessary Fittings are supplied without extra charge, such as Glass Water-Gauge, Safety Valve, Gauge Cocks, Pressure Gauge, Fire Bars, Fire Door, Blow-off Plug. The working parts are few, simple, easy of access, and very direct and efficient in action, while the finish is decidedly superior to what is usual on Engines of a similar form.

### PRICES OF ENGINES AND BOILERS COMPLETE.

2 Horse-power, Cylinder 4½ in. × 9 in. Stroke	£ 92	7 Horse-power, Cylinder 8½ in. × 14 in. Stroke	£ 210
3 " " " 5½ " 11 " "	115	8 " " " 9 " 14 " "	230
4 " " " 6½ " 13 " "	140	9 " " " 9½ " 16 " "	250
5 " " " 7½ " 14 " "	155	10 " " " 10½ " 16 " "	270
6 " " " 8 " 14 " "	185	12 " " " 11 " 18 " "	305



SELF-ACTING SLIDE AND SCREW-CUTTING LATHES.

With Double-Geared Headstocks, Gap Beds, Compound Slide Rest, Adjustable Back-Stay, Face Plate, Catch Plate, set of 22 Change Wheels, Top Driving Apparatus, and Screw Keys complete.

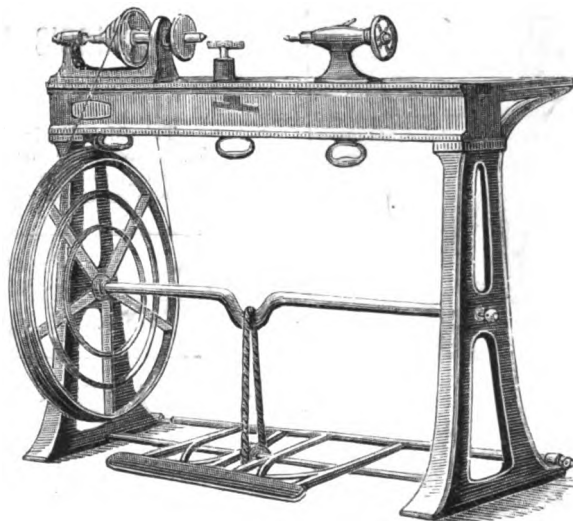
No.	Height of Centres.	Length of Bed.	Screw Cutting and Sliding by Screw.	Longer or Shorter Bed per Foot
	inches.	feet.	£	£ s. d.
1	6	6	52	2 6 0
2	7	7	58	2 17 6
3	8	8	63	3 9 0
4	9	9	69	4 0 0
5	10	10	104	4 12 6
6	12	12	127	5 15 0

### AMATEURS' LATHE.—LONDON PATTERN.

Complete with Planed Bed (V and Flat), Treadle and Hook, Crank and Driving Wheel, Hand Rest, Driving Chuck, Drill Chuck, and Two Centres.

No. 4. 4 in. Centres (3 Speeds) 3 ft. 6 in. Bed	£ 9 15s.
" 5. 5 " " 4 " 3 " 6 " " 11 0s.	
" 6. 5 " " 4 " 4 " Bed	11 10s.
Compound Slide Rests extra, 4 in. £ 4 5s., 5 in. £ 4 15s.	

### FOOT LATHES.



Complete with Planed Bed, Standards, Anti-Friction Treadle with Chain, Crank and Driving Wheel, Hand Rest, Face Plate, Drill Chuck, and Two Centres.

Height of Centres ..	4	5	6	inches.
Length of Bed ..	3	4	5	feet.
No. 2. Single Speed ..	14 0	17 10	28 0	each
No. 3. Double Gear ..	17 5	24 5	34 10	"

## ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON. E.C.

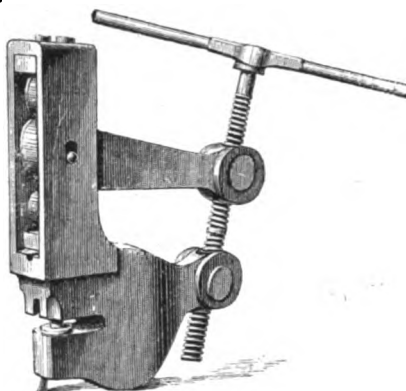
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## BAIRD'S PATENT LEVER PUNCHING BEAR,

FOR IRON SHIPBUILDERS, ENGINEERS, BOILERMAKERS, RAILWAY AND STEAMBOAT COMPANIES, BRIDGE GIRDER MAKERS, AND OTHERS.

The body of this PUNCHING BEAR has, after great experience, been brought up to the highest possible strength consistent with the least possible weight.

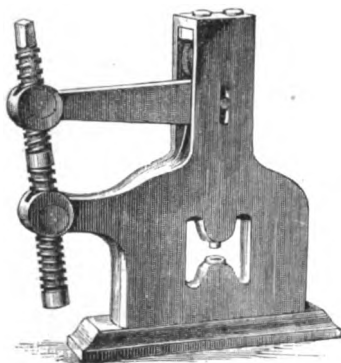
It is forged in a particular way from wrought iron specially selected and superior Welding Steel. The working parts are made of the finest Cast Steel, and well fitted. The mechanical arrangements are of such a nature that they are not liable to get out of repair; and the wear on the action is very slight, on account of the rolling motion given to the parts sustaining the actual pressure, thereby lessening the friction. The Screw Spindle will also stand constant work for a long time, as the strain is distributed equally



over its entire length by the power being greatest, and the downward motion of the Punch slowest, where it first comes in contact with the iron, the action gradually increasing in speed and decreasing in power as the Punch progresses through, so that the time lost at the beginning is fully made up at the end, when great power is not required.

SPECIAL PUNCHING BEAR  
MADE FOR GALLOWAY TUBES AT  
SAME PRICE AS BELOW.

Size.	Weight.	Diameter of Screw Spindle.	Diameter of Hole to be Punched.	Through Thickness of	Price of each.	PRICE OF EXTRA PUNCH OR BOLSTER, EACH: A 4s. B 5s. C 6s. D 7s.
Model.	lb.	inch.	inch.	inch.	£ s. d.	
A	20	$\frac{5}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	5 0 0	
B	38	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	7 10 0	
C	72	1	$\frac{1}{2}$	$\frac{1}{2}$	10 10 0	
D	92	1	$\frac{3}{4}$	$\frac{3}{4}$	12 0 0	
	112	$1\frac{1}{8}$	1	$\frac{5}{8}$	14 0 0	



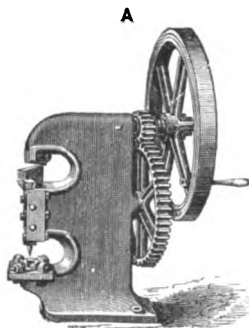
## BAIRD'S CLOSE-MOUTHED PUNCHING BEAR,

FOR IRON OR STEEL RAILS

This Machine is also forged from the best selected Scrap Iron, and will be found invaluable for Railway Companies, on account of the great ease this motion gives in working over any other yet known, and the Machine not being liable to get out of repair.

Weight about.	Oblong Hole to be Punched.	Through Iron.	Through Steel.	Price.
150 lb.	$1\frac{1}{8}$ in. diam.	$\frac{7}{8}$ in. thick.	$\frac{3}{4}$ in. thick.	£30

## PUNCHING AND SHEARING MACHINE.



No.	Will Punch Diam.	Through Plates Thick.	Distance from Edge of Plate.	Will Shear Bars Thick.	Approximate Weight.	Price to Work by Hand.	Price to Work by Power.
	in.	in.	in.	in.	cwt.	£ s. d.	£ s. d.
0	$\frac{1}{4}$	$\frac{1}{4}$	5	$\frac{1}{4}$	5	25 17 6	25 17 6
1	$\frac{3}{8}$	$\frac{3}{8}$	$7\frac{1}{2}$	$\frac{3}{8}$	10	40 5 0	40 5 0
2	$\frac{1}{2}$	$\frac{1}{2}$	8	$\frac{1}{2}$	18	51 15 0	51 15 0
3	$\frac{5}{8}$	$\frac{5}{8}$	16	$\frac{5}{8}$	21	63 5 0	63 5 0
4	$\frac{3}{4}$	$\frac{3}{4}$	11	$\frac{3}{4}$	30	..	74 15 0
5	$\frac{7}{8}$	$\frac{7}{8}$	$12\frac{1}{2}$	$\frac{7}{8}$	41	..	97 15 0
6	1	1	10	1	60	..	115 0 0

All are of similar design to the above, and have the Shear Blades set at an angle to cut Bars of any length.

ALEXANDER ANDERSON,

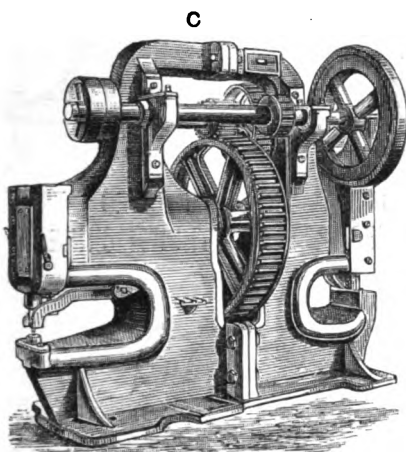
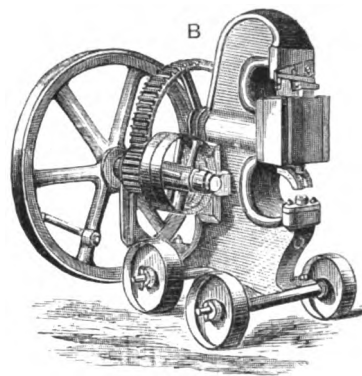
OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

## PUNCHING AND SHEARING MACHINES.

No.	Will Punch Diam.	Will Shear and Punch through Plates Thick.	Depth of Gap, Shear, and Punch.	Approximate Weight.	Price to Work by Hand or Power.
1	in. $\frac{3}{4}$	in. $\frac{3}{4}$	10	cwt. 30	£ 46
2	in. $\frac{3}{4}$	in. $\frac{3}{4}$	8	22	35
3	in. $\frac{3}{4}$	in. $\frac{3}{4}$	15	40	67

No. 3 Machine has stop for Punch, and is not portable.

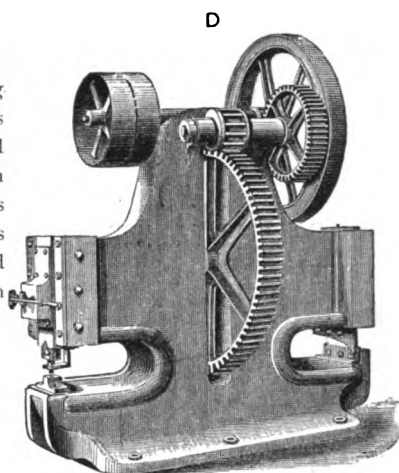
If to work by Hand only, price of Pulleys deducted.



No. 8.—Double Punching and Shearing Machine, as per this Engraving, will punch 1-inch hole through 1-inch plates, 18 inches from edge. Shear Blades are 12 inches long, and will cut 18 inches from edge.

Weight, 110 cwt.

Price, £195.



No.	Will Punch Holes Diam.	Will Shear and Punch through Plates Thick.	Depth of Gap, Shear, and Punch.	Approx. Weight.	Price.
1	in. $\frac{3}{4}$	in. $\frac{3}{4}$	18	cwt. 90	£ 138
2	in. $\frac{3}{4}$	in. $\frac{3}{4}$	20	120	178
3	1	1	22	190	244
4	1 $\frac{1}{2}$	1 $\frac{1}{2}$	24	240	298
5	1 $\frac{1}{2}$	1 $\frac{1}{2}$	24	360	528

Angle Iron Cutter, Engine, and Crane extra.

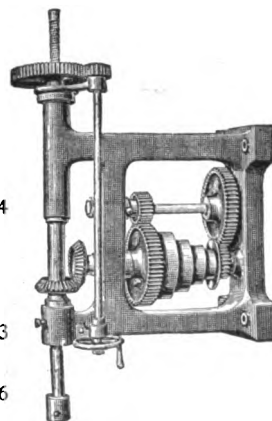
All these Machines have stop motion for punch.

## WALL DRILLING MACHINE.

No. 9.—Single-Speed Wall Drilling Machine, to admit 5 ft. 4 in. dia., with 2-in. Spindle and 18-in. Hand Feed .. .. £34

No. 10.—Double-Geared Wall Drilling Machine, to admit 5 ft. 4 in. dia., with 2-in. Spindle and 18-in. Hand Feed .. 43

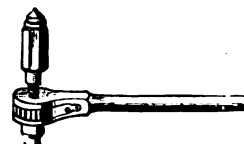
No. 10.—If fitted with Self-acting Feed Motion .. .. 46



No. 10

## RATCHET BRACES.

12	14	16	18	22	24 inches.
20/-	22/-	24/-	28/-	32/-	36/- each.



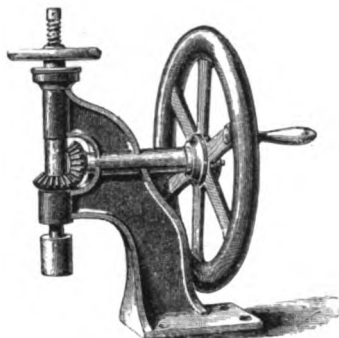
ALEXANDER ANDERSON,

Office: 9, LONDON STREET. Warehouse: VINE STREET, MINORIES, LONDON, E.C.

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## DRILLING MACHINES.

### HAND BENCH DRILLING MACHINE.



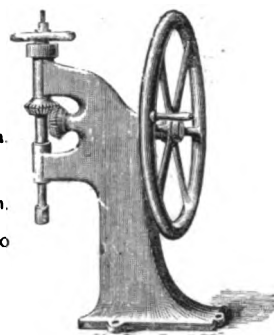
No. 1.—With Hand and Feed Wheel.

15 in high,	5 in. central,	57/6
20 "	5½ "	86/6
25 "	6 "	126/6
30 "	7½ "	170/-
36 "	9½ "	277/6

No. 2.—With Hand Wheel and Cone Pulley.

36 in. high,	12 in. centre,	300/-
42 "	13 "	415/-
48 "	14 "	530/-

### IMPROVED BENCH DRILLING MACHINE.



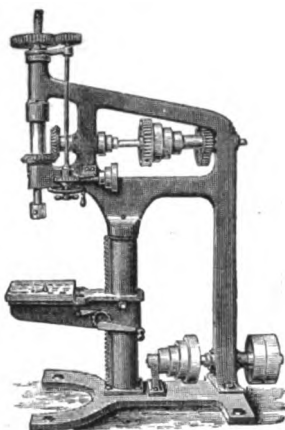
30-in.

Height of Casting,  
30 in. 42 in.

Admits in Diam.,  
13 in. 22 in.

Price £8 10 £13 10

### IMPROVED DRILLING MACHINE.

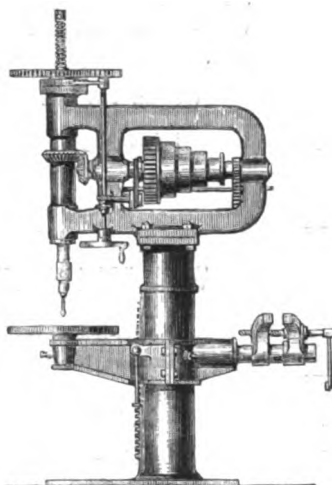


No. 5.

No. 4.—Single Speed, to admit 24 in. dia., 1½-in. Spindle, 9-in. Feed .. ..	£34
No. 5.—Double Geared, to admit 24 in. dia., 1½-in. Spindle, 9-in. Feed .. ..	46
No. 6.—Double Geared, to admit 30 in. dia., 2-in. Spindle, 12-in. Feed .. ..	63
No. 7.—Double Geared, to admit 36 in. dia., 3-in. Spindle, 18-in. Feed .. ..	97
No. 8.—Double Geared, to admit 42 in. dia., 4-in. Spindle, 21-in. Feed .. ..	120

All the above are fitted with Self-acting Feed Motion, and are of similar design to the No. 5 Machine.

### STRONG DOUBLE-GEARED VERTICAL DRILLING MACHINES.



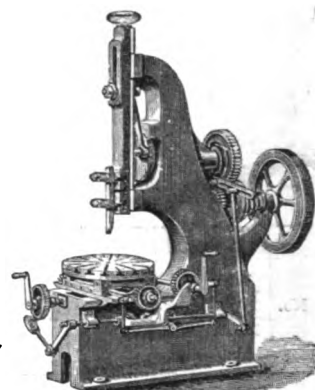
On Turned Columns, Spindles of best Cast Steel, with Self-acting Feed and Top Gear complete.

Diameter of Spindle.	Travel.	PRICE.
1½ in. ..	9 in. ..	£64
2 " ..	10 " ..	78
2½ " ..	14 " ..	115
3 " ..	18 " ..	172

Single ditto ditto, 1½-in. Spindle, 9-in. Travel, with Self-acting Feed, £55.

Vice extra.

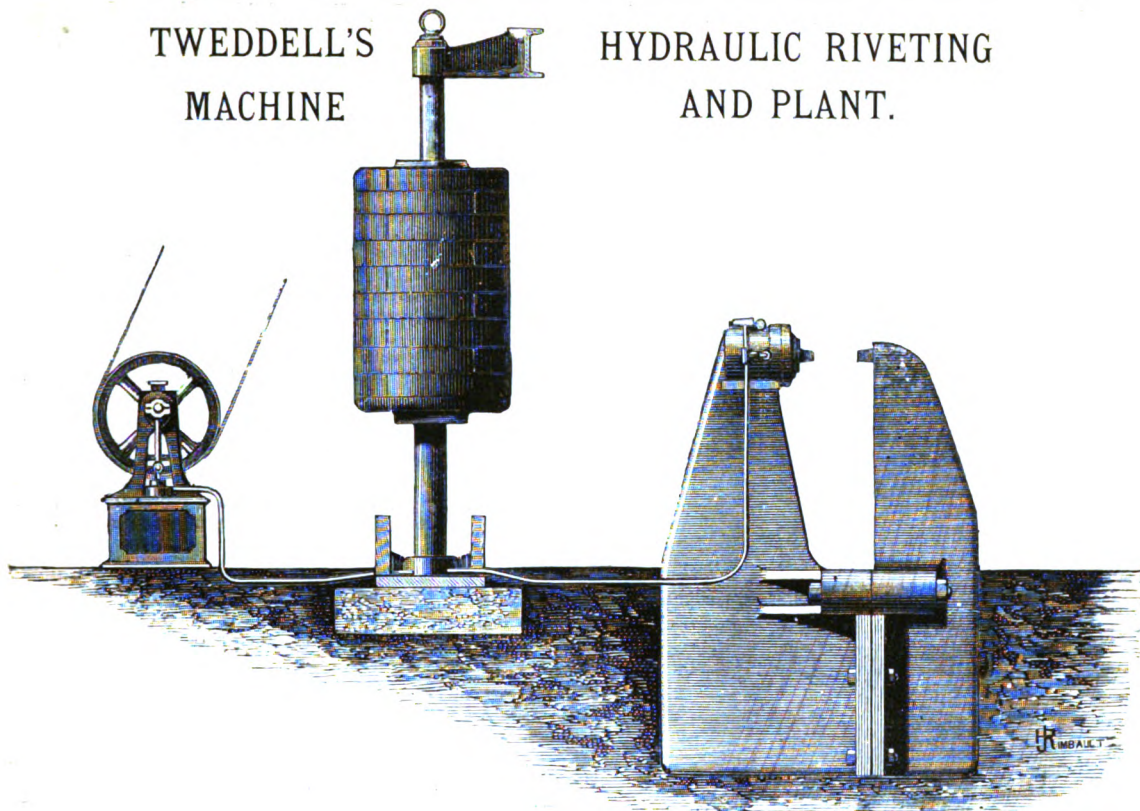
### IMPROVED SLOTTING MACHINE.



No. 1.—5-in. Stroke, to admit 28 in. dia., with Compound Table, the Top Slide by Hand, and the bottom one Self-acting. Weight, 10 cwt. .. ..	£46
No. 2.—8-in. Stroke, to admit 3 feet dia., with Circular Table 20 in. dia., Self-acting on all Cuts. Weight, 30 cwt. .. ..	103
No. 3.—9-in. Stroke, to admit 3 feet 6 in. dia., with Circular Table 24 in. dia., Self-acting on all Cuts. Weight, 45 cwt. .. ..	138
No. 4.—12-in. Stroke, to admit 4 feet 6 in. dia. Weight, 80 cwt. .. ..	210

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

TWEDDELL'S  
MACHINEHYDRAULIC RIVETING  
AND PLANT.

This Machine having proved itself not only specially adapted to the altered requirements of "Marine" Boiler construction, caused by the introduction of Compound Engines, but also equally suitable to all classes of Land and Agricultural Boilers, Ship and Bridge Work, the Inventor and Manufacturers would again call attention to the following advantages which it possesses, viz.:

I. The saving in first cost by the avoidance of almost all foundations, and the economical method in which the power is applied, compares most favourably with the heavy masonry and the extravagant expenditure of steam in the Steam Riveting Machines.

II. The pressure brought to bear on the rivet combines the character of a blow and a squeeze, and the power of retaining this pressure until the rivet is cold is, in the case of thick plates, a most important and valuable advantage; and since the stroke of riveting die adjusts itself to suit any inequality in the length of rivet, no fracture can ensue when the rivet is too long, and an equally close joint is made when the rivet is too short.

III. These machines can close twelve rivets per minute, a number which is found to afford ample margin over what is required in ordinary practice for boiler work. For girder work a greater speed can be obtained.

IV. The perfect silence in which the work is done, the economy in actual working expenses, especially in decreased wear and tear of cupping dies, the small amount of wear and tear of machine itself, owing to the complete freedom from vibration, are all points of great value, to which may be added the facility of applying the reserve of power contained in the accumulator to Tweddell's Patent Portable Riveters, Shearing, and Punching Machines, Bending Presses, and other hydraulic machinery.

These Machines are made to exert from 25 tons to 40 tons closing power on the rivet head, and from 4 feet 6 in. gap to 10 feet, which enables the whole of the shell of a massive boiler to be riveted at one lift. Machines at higher pressure can be made and estimated for, but the experience gained from many years' use and manufacture has proved that too much pressure is injurious, and 40 tons can do any work up to 1½-in. rivets and 1½-in. plates.

## PRICE LIST FOR FIXED RIVETER.

Class.	Closing Pressure on Rivet Head.	Depth of Gap.	Price Complete, with Double Pumps and Accumulator.	Class.	Closing Pressure on Rivet Head.	Depth of Gap.	Price Complete, with Double Pumps and Accumulator.
A	25 Tons.	4 ft. 6 in.	£330	D	40 Tons.	4 ft. 6 in.	£440
A <sup>s</sup>	25 "	4 " 6 "	360	F	40 "	5 " 0 "	470
B	25 "	5 " 0 "	350	K	40 "	5 " 6 "	500
B <sup>s</sup>	25 "	5 " 0 "	400	G	30 "	5 " 0 "	430
C	25 "	6 " 0 "	400	H	30 "	10 " 0 "	740

Terms—Nett Cash, delivered F.O.B. River Tyne.

**OBSERVE.**—These Prices include Accumulator and Pumps, and the additional expense incurred for Foundations and Pipes is merely nominal.

A<sup>s</sup> and B<sup>s</sup> have wrought-iron holders-up and can take in small tubes or do small fire boxes.

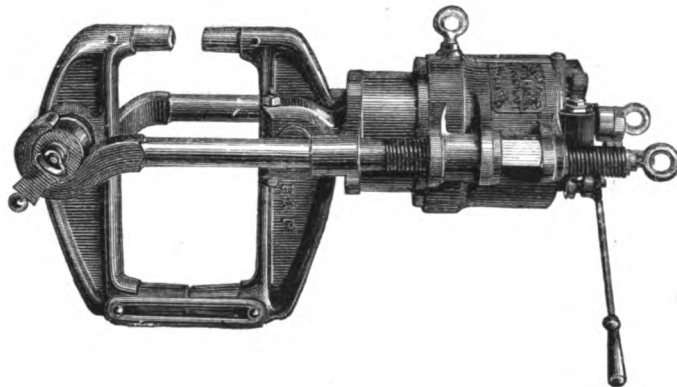
All these Machines are capable of having pressure on the rivet readily reduced when light work is required.

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

## TWEDDELL'S PORTABLE HYDRAULIC RIVETER.

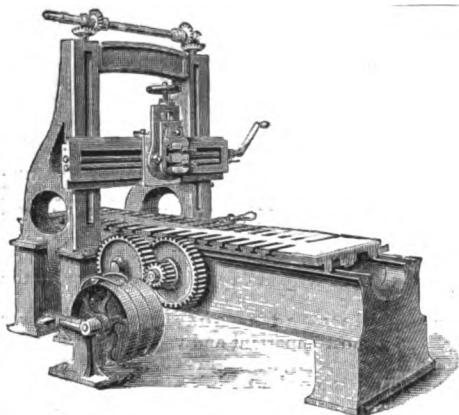
FOR RIVETING-UP BRIDGES, GIRDERS, SHIPS' FRAMES, KEELSONS, BOILER-FLUE RINGS  
AND ENDS, GUN CARRIAGES, &c., &c.



These Machines can close 300 rivets,  $\frac{3}{4}$ -inch diameter, per hour, and are especially adapted for all straight work, such as girders, ships' frames, &c., or any work where great depth of gap is not required. They are all fitted as punching machines also, and when the levers are removed they make very powerful machines for this purpose. They are made to do the above work at 1500 lb. per square inch; they will, however, do very good work at 700 lb., using a size larger. The levers can be had of any proportions required. These machines are also made stationary up to any power, and a very compact arrangement on a wall bracket is designed for riveting Boiler-Flue Rings. Special copper pipes are supplied at 2s. per foot, and hydraulic couplings at 20s. each.

### PRICES.

Class A closes $\frac{3}{4}$ -in. rivets 6 in. from edge of plate, and $\frac{1}{4}$ -in. rivets 13 in. from edge of plate .. ..	£115
„ B „ 1 „ „ 8 „ „ and „ „ 17 „ „ .. ..	145
„ C „ $1\frac{1}{4}$ „ „ 13 „ „ and „ „ 26 „ „ .. ..	165

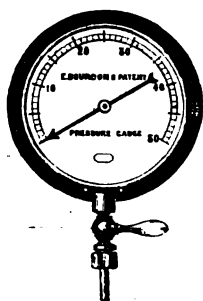


## SELF-ACTING PLANING MACHINES.

No.	Will Plane in Length.	Will Plane in Width.	Will Plane in Depth.	Price.
	ft. in.	ft. in.	ft. in.	£ s. d.
3	4 0	2 0	2 0	86 5 0
4	6 0	3 0	2 6	138 0 0
5	8 0	3 0	2 6	155 0 0
6	10 0	4 0	3 6	287 10 0
7	12 0	4 6	3 8	322 0 0

Specifications given for other Sizes.

## BOURDON'S OWN PATENT PRESSURE AND VACUUM GAUGES.



No. 2.—Pressure Gauge, in Oblong Case of Japanned Iron, with Enamelled Dial, to indicate up to 250 lb. upon the square inch, with connecting screw joint .. ..	£1 12 6
No. 3. Do. 7 inches diameter, with eccentric hand to indicate up to 250 lb. upon the square inch .. ..	2 5 0
No. 4. Do. 7 inches diameter, with central hand to indicate up to 250 lb. upon the square inch .. ..	2 10 0
No. 7. Do. 4 inches diameter, with eccentric hand to indicate up to 250 lb. upon the square inch .. ..	1 11 3
No. 7*. Do. 4 inches diameter, with central hand to indicate up to 250 lb. upon the square inch .. ..	1 13 6
No. 8. Do. 5 inches diameter, with eccentric hand to indicate up to 250 lb. upon the square inch .. ..	1 15 0
No. 8*. Do. 5 inches diameter, with central hand to indicate up to 250 lb. upon the square inch .. ..	1 17 6
No. 9.—Vacuum Gauge, 5 inches diameter, with central hand .. ..	2 7 6
No. 10. Do. 7 do. do. .. ..	2 12 6

The above are in round Cases of Polished Brass, and fitted with Gun-Metal Cocks.

*Subject to Discount.*

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIS, LONDON, E.C.

# NEW PATTERN SMITHS' BELLOWS,

With Patent Reversible Pipe.

16 inch ..	£1 8 0	30 inch ..	£4 12 0
18 " ..	1 12 0	32 " ..	5 10 0
20 " ..	1 18 0	34 " ..	6 17 0
22 " ..	2 6 0	36 " ..	8 16 0
24 " ..	2 14 0	38 " ..	11 0 0
26 " ..	3 5 0	40 " ..	13 16 0
28 " ..	3 16 0	42 " ..	16 10 0

Ordinary Smiths' Bellows same price as above.

*Packing for Export, 2s. to 3s. per pair extra.*

## ADVANTAGES OVER ORDINARY BELLOWS.

By reversing or inserting the pipe in the Bellows, and placing the Gudgeons (or slide irons) and Lifting Hook in the pipe, they contain less than one-half the usual shipping measurement.

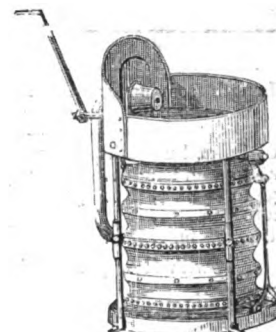
The arrangement of this pipe is most simple and effective, as it does not affect the internal arrangement of the Bellows, which are not liable to damage during exportation, as the Pipe, Gudgeons, and Lifting Hook cannot come in contact with the leather.



# CIRCULAR RIVET FORGE.

16-in Circular Bellows ..	£4 12 0
18 " " ..	5 0 0
20 " " ..	5 16 0
22 " " ..	6 15 0
24 " " ..	7 18 0
26 " " ..	10 0 0

*Packing for Export extra.*



# IRON-CASED PORTABLE FORGE.

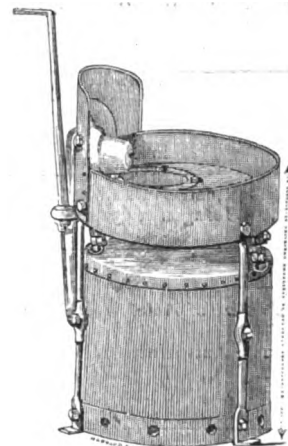
FOR RIVETING PURPOSES.

This Forge is specially suited to general out-door purposes, and will be found suitable to exposure in any climate. The iron casing is constructed especially to protect the Bellows, and the syphon and valve arrangement of the blast pipe, &c., is such as to prevent any deposit or gases entering, thereby avoiding explosion, which is so common with the ordinary Forge.

Diameter, 22 in. Height, 32 in.

22 in. wide x 32 in., Round Shaped ..	£5 15 0
24 " " 30 " Square " ..	8 15 6
27 " " 32 " " " ..	10 5 0
30 " " 34 " " " ..	11 15 0

*Packing for Export extra.*



ALEXANDER ANDERSON,

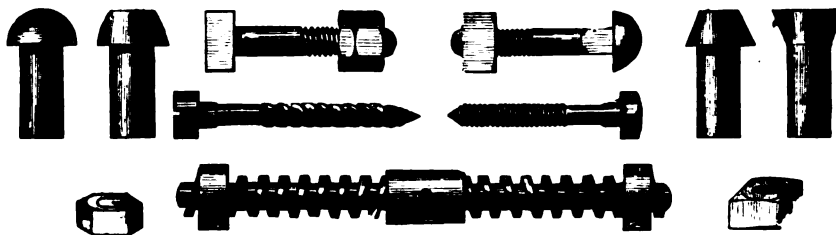
OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.



## Fairbairn's Patent Rolled Wood and Coach Screws and Bolts.

The threads of these Screws are rolled on bolts or spikes by patent machinery, and are clearly a great deal stronger than the ordinary cut threads, which are made by cutting away the strongest portion of the fibres of the iron.

The disproportion which exists in ordinary cut Screws between the strength of the screwed and unscrewed portions of



the bolts is, by means of this process of manufacturing them, quite removed, for by raising the thread above the size of the neck (as shown in the figures), we obtain a better distribution of the iron for strength and lightness; thus the bottom of the threads, or groove between the threads, is only

half the depth of the thread below the body or neck of the bolt, while the top of the thread is raised the same distance above it. There are also more bolts of any size in a given weight than if made by any other process.

By rolling the thread on the bolt, or spike, the iron is improved and refined, and as there is no waste of material the manufacturers are thereby enabled to offer screwed Spikes, Bolts, or Wood Screws, at prices very little above the ordinary dog-head spikes or fang bolts, on all sizes, from half an inch and upwards. Screws of any pitch, shape of thread, or diameter, are made at very short notice. The advantages of these Screws are—

**Greater Holding Power, Durability, Strength, and Lightness.**

**There are more in a Ton of any given size.**

**There is very little more Labour, if any, in using them as Spikes, and less if used as Fang Bolts.**

### WOOD AND COACH SCREWS, SQUARE HEADS.

Length from under head to point.	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1 inch.	
6½ in. and upwards	34/	32/	30/	25/	25/	24/	24/	cwt.
4½ to 6 in. long ..	36/	34/	32/	27/	26/	26/	26/	"
3½ to 4½ in. ,, ..	39/	36/	33/	29/	28/	28/	28/	"
2 to 3 in. ,, ..			36/	30/	30/	30/	30/	"
Under 2 in. ,, ..								"

If with Hexagon Heads, 1/0 per cwt. extra.

½ in. diameter under 2 in. long, 5/0 per gross.  
 Advancing 1/0 per in. per gross for every in. or fraction of an in.

¾ in. diam. under 2 in. long, 7/6 per gro.; 2 to 3 in. 9/6 per gro.  
 1/8 " " 2 " 10/0 " 2 " 3 " 11/0 "

### ENGINEERS' BOLTS (Best Quality), SQUARE HEADS AND NUTS AND ROUND NECKS.

Length from under head to points.	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	1½"	
6 in. and upwards	30/	26/	24/	22/	22/	22/	22/	
4½ to 6 in. long ..	32/	28/	26/	24/	24/	25/	26/	
3½ to 4½ in. ,, ..	34/	30/	28/	26/	26/	27/	28/	
2 to 3 in. ,, ..			32/	30/	29/	29/	30/	31/

If with Square Necks, 1/0 extra per cwt.  
If with Hexagon Nuts, 2/6 extra per cwt.

½ in. diameter under 2 in. long, 6/0 per gross.  
 Advancing 1/0 per in. per gross for every in. or fraction of an in.

¾ in. diam. under 2 in. long, 7/0 per gross; 2 to 3 in. 8/6 per gross.  
 1/8 " " 2 " 7/6 " 2 " 3 " 10/0 "

If with Hexagon Nuts, 1/0 per gross extra.

#### BOLT ENDS (per cwt.).

inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1½	1½	1½	1½
With Square Nuts	28/	25/	21/	20/	18/	17/	17/	18/	19/	20/
Hexagon ,,	32/	28/	23/	22/	20/	20/	20/	20/	21/	22/

#### MACHINE-MADE NUTS (per cwt.).

Size of Hole. inch	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	1	1½	1½	1½	1½
Square Nuts, Untap'd	27/	24/	23/	23/	24/	25/			
,, Tapped	32/	30/	29/	29/	30/	31/			
Hexagon,, Untap'd	35/	31/	28/	28/	30/	31/			
,, Tapped	43/	40/	37/	36/	36/	36/			

### HAND-MADE NUTS.

Size of Hole. inch	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	1	1½	1½	1½	1½	Square Nuts.	Per Gross.	Hexagon Nuts.	Per Gross.
Square Nuts, Untap'd, cwt.	29/	28/	27/	27/	27/	33/	34/	35/	36/	$\frac{1}{8}$	Untapped. 1/2 Tapped. 1/6	$\frac{1}{8}$	Untapped. 2/3 Tapped. 2/9
,, Tapped, ,,	35/	34/	33/	33/	34/	39/	39/	40/	41/	$\frac{1}{8}$	1/5 1/8	$\frac{1}{8}$	2/9 3/2
Hexagon,, Untap'd, ,,	42/	35/	33/	33/	33/	33/	34/	35/	36/	$\frac{3}{8}$	2/3 2/9	$\frac{3}{8}$	3/2 3/8
,, Tapped, ,,	50/	43/	39/	39/	40/	40/	40/	41/	42/	$\frac{7}{8}$	2/11 3/5	$\frac{7}{8}$	3/5 4/4

### SHIP, OR GIRDER, AND BOILER RIVETS (per cwt.).

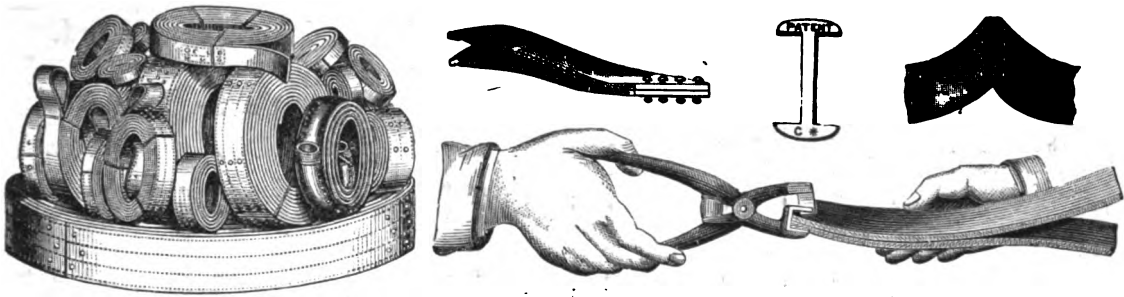
inch	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1
Boiler .. .. .	31/0	28/0	27/0	26/0	21/0	19/0	18/0	16/6	16/6	16/6	16/6
Ship, or Girder ..	32/0	30/0	28/0	27/0	22/0	20/0	19/0	17/3	17/3	17/3	18/0

Special quotations on receipt of Specifications.

**ALEXANDER ANDERSON,**

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.





## LEATHER MACHINE-BANDS.

## BEST SINGLE STRAPS.

Width.	Per foot.	s.	d.	Width.	Per foot.	s.	d.
1 inch ..	..	0	4	5 inch ..	..	2	5
1½ " ..	..	0	5½	5½ " ..	..	2	7
1¾ " ..	..	0	7	6 " ..	..	2	9
1¾ " ..	..	0	8	6½ " ..	..	3	0
2 " ..	..	0	9	7 " ..	..	3	4
2½ " ..	..	0	10	7½ " ..	..	3	8
2½ " ..	..	1	0	8 " ..	..	4	0
2¾ " ..	..	1	2	8½ " ..	..	4	4
3 " ..	..	1	3½	9 " ..	..	4	7
3½ " ..	..	1	5	9½ " ..	..	4	11
3½ " ..	..	1	6½	10 " ..	..	5	2
3¾ " ..	..	1	8	10½ " ..	..	5	6
4 " ..	..	1	10	11 " ..	..	5	9
4½ " ..	..	1	11½	11½ " ..	..	6	1
4½ " ..	..	2	1	12 " ..	..	6	6
4¾ " ..	..	2	3				

## BEST DOUBLE STRAPS.

Width.	Per foot.	s.	d.	Width.	Per foot.	s.	d.
3 inch ..	..	2	7	9 inch ..	..	8	11
3½ " ..	..	2	10	9½ " ..	..	9	5
3¾ " ..	..	3	2	10 " ..	..	10	0
3¾ " ..	..	3	5	10½ " ..	..	10	10
4 " ..	..	3	7	11 " ..	..	11	6
4½ " ..	..	3	10	11½ " ..	..	12	1
4½ " ..	..	4	1	12 " ..	..	12	7
4¾ " ..	..	4	3				
5 " ..	..	4	6				
5½ " ..	..	4	10				
6 " ..	..	5	4				
6½ " ..	..	6	0				
7 " ..	..	6	6				
7½ " ..	..	7	2				
8 " ..	..	7	11				
8½ " ..	..	8	5				

BANDS FOR PORTABLE ENGINES.  
At per lb.

LEATHER BELTING  
In rolls not less than 200 ft.  
At per lb.

## WHITE OX-HIDE OR BROWN LACES.

	Per gross.	s.	d.		Per gross.	s.	d.
2 feet ..	..	6	6	4 feet ..	..	25	0
2½ " ..	..	10	0	4½ " ..	..	30	0
3 " ..	..	16	0	5 " ..	..	35	0
3½ " ..	..	20	0	6 " ..	..	53	0

## STRAP SCREWS.

	Per doz.	s.	d.
½ " ..	..	1	5
⅝ " ..	..	1	8
¾ " ..	..	2	0
⅞ " ..	..	2	1
1 " ..	..	2	5
1 ⅛ " ..	..	2	8
1 ¼ " ..	..	2	10
1 ½ " ..	..	3	2

## GREENE'S BELT FASTENERS.

	Per 100.	s.	d.
No. 5 ..	..	3	0
" 4 ..	..	3	9
" 3 ..	..	4	0
" 2 ..	..	6	0
" 1 ..	..	8	0
" 0 ..	..	10	0
Cutters, 6/o and 4/o each.			
Awls, 1/o.			

## HIDE ROPE,

For Ships' Rudders, and for driving Machinery, 2/9 per lb.

## LEATHER DELIVERY AND SUCTION HOSE.

COPPER RIVETED  
DELIVERY HOSE.

Equal in strength to 3-ply  
Indiarubber Hose.

	Per foot.	s.	d.
1 inch ..	..	1	5
1½ " ..	..	1	9
1¾ " ..	..	2	0
2 " ..	..	2	2
2½ " ..	..	2	4
2½ " ..	..	2	7
2¾ " ..	..	3	0
3 " ..	..	3	4
3½ " ..	..	3	9
4 " ..	..	4	5

COPPER RIVETED  
SUCTION HOSE.

Equal in strength to 4-ply  
Indiarubber Suction Hose.

	Per foot.	s.	d.
1½ inch ..	..	3	9
1¾ " ..	..	3	11
2 " ..	..	4	1
2½ " ..	..	4	5
2½ " ..	..	4	11
3 " ..	..	5	3
3½ " ..	..	6	5
4 " ..	..	7	3

FLEXIBLE  
SUCTION HOSE.

Bound with Copper Wire  
outside.

Equal in strength to 3-ply  
Indiarubber Suction Hose.

	Per foot.	s.	d.
1½ inch ..	..	3	3
1¾ " ..	..	3	4
2 " ..	..	3	5
2½ " ..	..	3	8
2½ " ..	..	4	0
3 " ..	..	4	5
3 " ..	..	4	9

COPPER RIVETED  
SUCTION HOSE.

With Copper Spiral Wire  
inside.

	Per foot.	s.	d.
1½ inch ..	..	5	9
1¾ " ..	..	6	5
2 " ..	..	7	0
2½ " ..	..	7	10
2½ " ..	..	8	5
2¾ " ..	..	9	7
3 " ..	..	10	6
3½ " ..	..	12	5
4 " ..	..	14	9

Copper Spiral Hooping at lower  
prices.

## ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.

## LEATHER DELIVERY AND SUCTION HOSE—continued.

## WOVEN CANVAS HOSE.

inch .. .. .	3½d. per foot.
1 .. .. .	4d. "
1½ .. .. .	5d. "
2 .. .. .	6d. "
2½ .. .. .	7d. "
3 .. .. .	9d. "
4 .. .. .	10d. "
5 .. .. .	11d. "
6 .. .. .	1/0 "
8 .. .. .	1/1 "
10 .. .. .	1/2 "

Large Sizes up to 10 inch made to order.

*This Hose can be Burntized at 3d. per yard extra.*

## COTTON CANVAS AND INDIARUBBER BANDS.

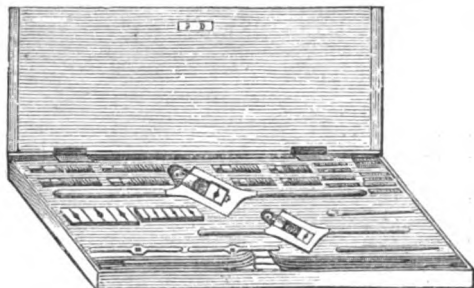
Width in inches.	2-ply.	3-ply.	4-ply.	5-ply.	6-ply.
1	s. d. 0 5	s. d. 0 6	s. d. 0 7½	s. d. 0 0	s. d. 0 0
1½	0 7	0 9	0 10½	0 0	0 0
2	0 9	0 11½	1 2	1 4	1 6½
2½	0 11	1 2	1 5	1 8	1 11
3	1 1	1 4½	1 8	2 0	2 3½
3½	1 3	1 7	1 11	2 3½	2 8
4	1 5	1 9½	2 2½	2 7½	3 0
4½	1 7	2 0	2 5½	2 11	3 4½
5	1 9	2 2½	2 8½	3 3	3 9
5½	1 11	2 5	3 0	3 6½	4 1
6	2 1	2 8	3 3	3 10½	4 5½
6½	2 3	2 10½	3 6	4 2	4 10
7	2 5	3 1	3 9½	4 6	5 3
8	2 9	3 6	4 3½	5 2	6 0
9	3 1	3 11	4 10	5 10	6 9
10	3 5	4 4	5 5	6 6	7 6
11	3 9	4 9	6 0	7 2	8 3
12	4 1	5 2½	6 7	7 10	9 0

SUBJECT TO DISCOUNT.

## BEST SCREW STOCKS AND DIES FOR ENGINEERS,

IN POLISHED CASES.

Complete with Taper and Plug Taps to each Size, and Tap Wrenches.



To Screw, ½, ⅝, ¾, 1, 1½, 2, and 2½, 1 inch ..	£7 0 0
„ ⅝, ¾, 1, 1½, 2, 2½, and 3, 1, 1½, 1¾ ..	9 0 0
„ ¾, 1, 1½, 2, and 2½, 1, 1½, 1¾ ..	8 0 0
„ 1, 1½, 2, and 2½, 1, and 1½, 1¾, 1¾ ..	13 0 0
„ 1½, 2, and 2½, 1, and 1½, 1¾, 1¾, and 1¾, 1¾, 1¾, 2 ..	24 5 0

(This set can be had in one or two cases.)

## PRICE OF WORKING TAPS, MASTER TAPS, MACHINE TAPS, AND SCREW TOOLS

ADDED TO THE ABOVE CASES WHEN ORDERED, EXTRA.

	1½ 1 1½	¾ 1 1½	¾ 1 1½	1 1½ 1¾ 1½ 1½
Extra Working Taps, each .. .. .	2/- 2/6 2/6	3/- 3/6 4/-	5/- 6/- 7/-	8/- 9/6 11/- 12/6 15/-
„ Master .. .. .	2/6 3/- 3/-	3/6 4/3 5/-	6/- 7/- 8/-	10/- 12/- 14/- 16/- 19/-
Machine Taps, each .. .. .	4/-	4/6	5/-	7/6
Screw Tools, per pair .. .. .				
	1½ 1½ 1½ 2	2½ 2½ 2½ 2½	2½ 2½ 2½ 3 in.	
Extra Working Taps, each .. .. .	17/- 19/- 22/- 26/-	30/- 34/- 38/- 43/-	50/- 55/- 62/- 70/-	
„ Master .. .. .	22/- 24/- 27/- 32/-	36/- 40/- 45/- 50/-	60/- 65/- 72/- 82/-	
Machine Taps, each .. .. .	7/6	8/6	9/6	
Screw Tools, per pair .. .. .				

Fluted Rimers same Price as Working Taps.

ALEXANDER ANDERSON,

OFFICE: 9, LONDON STREET. WAREHOUSE: VINE STREET, MINORIES, LONDON, E.C.